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EMERGING INFECTIOUS DISEASES®

Prion Disease in Dromedary Camels, Algeria

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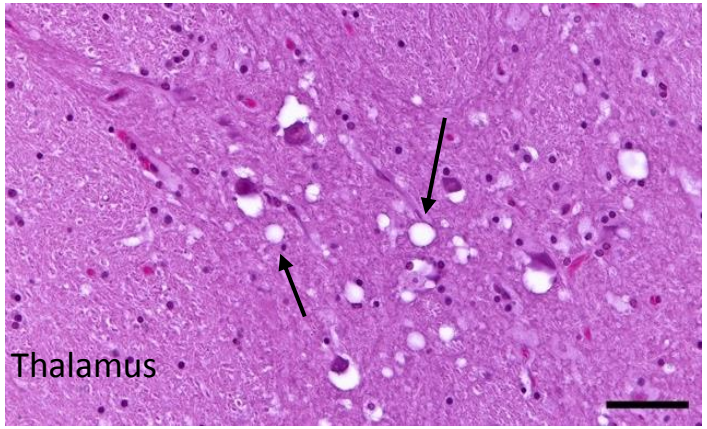
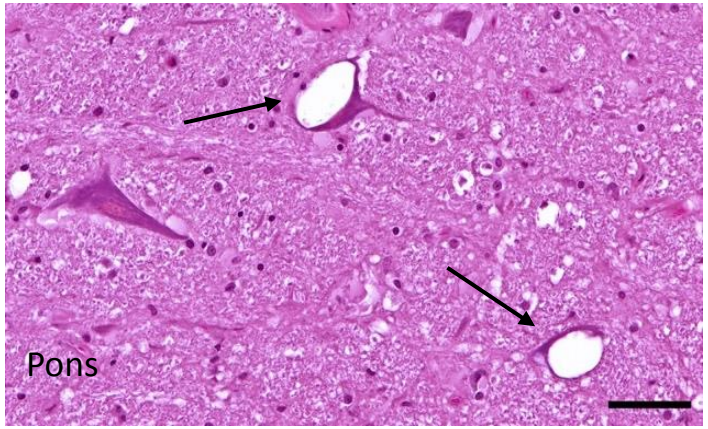
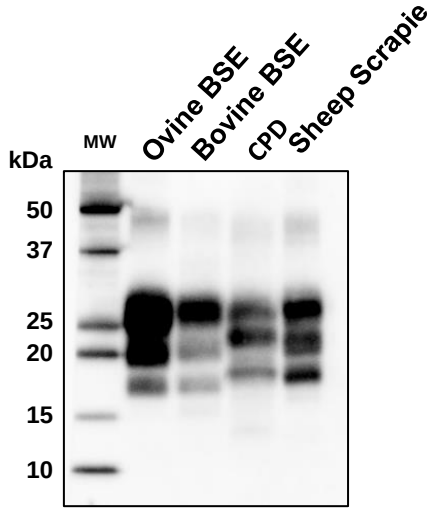
Laboratory investigations

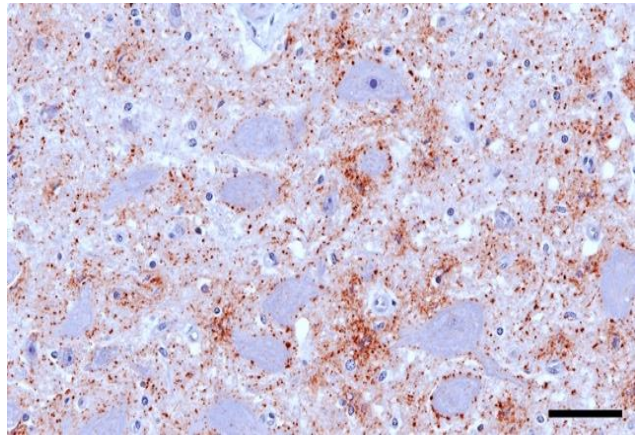
Spongiform change

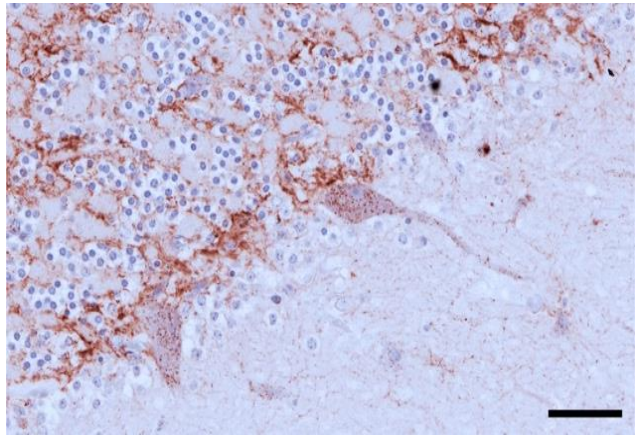




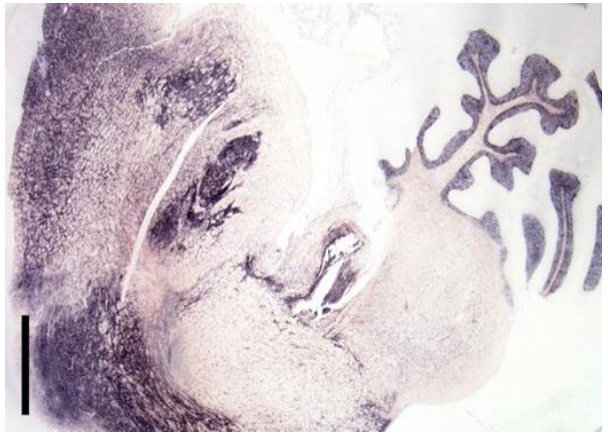


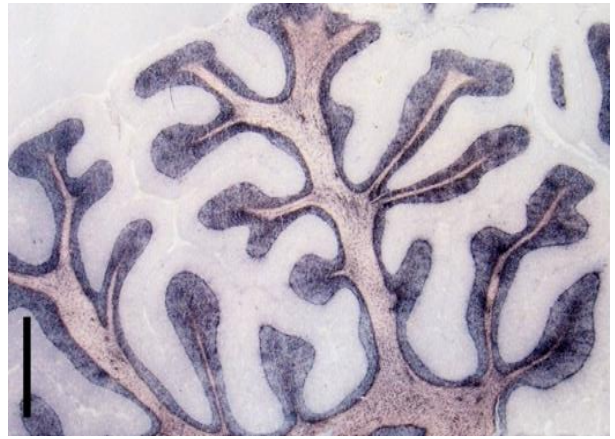
IHC PrP^{Sc} deposition



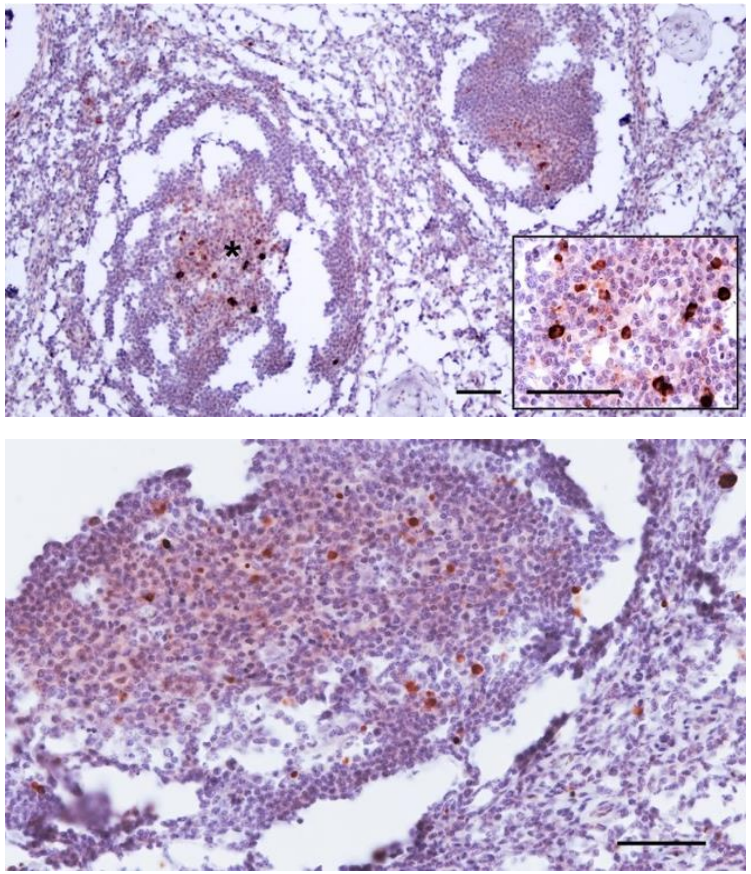


PET blot PrP^{Sc} distribution





Immunohistochemical examination of lymphoid tissues



Cervical, prescapular, and lumbar aortic lymph nodes were collected from one symptomatic animal.

Immunohistochemistry revealed PrP^{Sc} deposition in primary and secondary follicles from all lymph nodes.

Prion diseases

Animals

- Scrapie (sheep, goats)
- Transmissible mink encephalopathy
- Chronic wasting disease
- Bovine spongiform encephalopathy
- Camel prion disease

Humans

- Creutzfeldt-Jakob disease
- Gerstmann-Straüssler-Sheinker syndrome
- Fatal familial insomnia
- Variant Creutzfeldt-Jakob disease

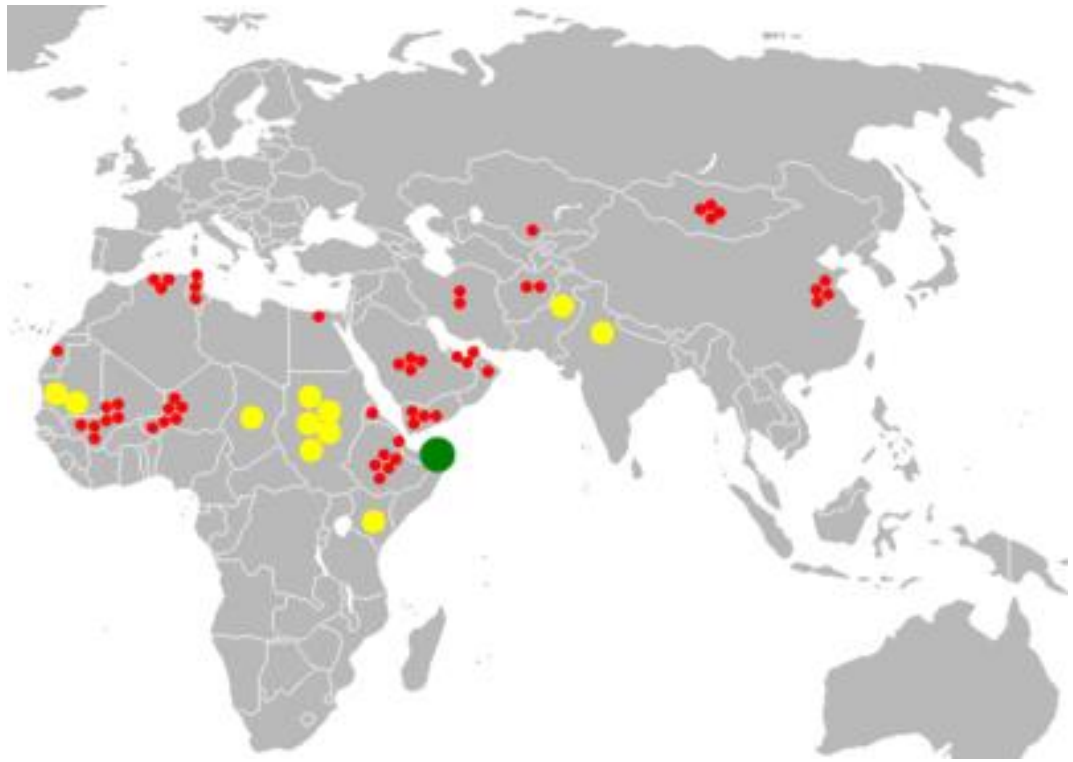
According to the FAO live animals statistics, the worldwide camel population is ~35 million heads (FAO, 2019), most of which are in Somalia, Sudan, Niger, Kenya, Chad, Ethiopia, Mali, Mauritania, and Pakistan.

Camels have represented and still represent the means of subsistence for millions of families who live in the most hostile ecosystems on the planet.

Partly due to climatic changes, areas of camel rearing are expanding, especially in Africa (Faye et al., 2012).

During the past years, the camel farming system has evolved rapidly and improved substantially (Faye et al., 2014).

The emergence of a prion disease in a farmed animal species of such importance requires a thorough risk assessment for implementing evidence-based policies to control the disease in animals and minimize human exposure.



100
10
1

Camel headcount in 2003 shown as a percentage of the top market (Somalia – 7,000,000

CPD: what we know

- CPD is a novel prion disease
- It has been reported in Algeria (Prof. Baaissaa Babelhadj) and Tunisia (Prof. Abdelkader Amara Ecole Vétérinaire, Sidi Thabet)
- It affects adult animals
- In the Ouargla Region (Algeria), where CPD has been first identified, its incidence is rapidly and progressively increasing (Baaissa, personal communication)
- The involvement of the lymphoreticular system suggests CPD is an infectious prion disease
- Preliminary reults suggest that the CPD prion strain is different from scrapie and BSE

CPD: what we don’t know

- What is the origin of CPD?
- What is his geographic distribution?
- How does CPD transmit?
- Does a genetic resistence to CPD exist in the dromedary species?
- What is the risk for humans?
- ……

Three main areas of research and intervention:

- Getting knowledge on CPD geographic distribution
- Investigating the possible existance of genetic factors modulating CPD susceptibility/resistance
- Establishing diagnostic capacity and a surveillance system on neurological symptoms, at local level

Italy has got excellent capacity in the field of prion diseases and through the European Reference Laboratory and the OIE Reference Laboratory for prion diseases would be pleased to collaborate with local Competent Authorities and official laboratories and to provide technical-scientific support.